dsPicFLASH™

User manual

Flash program is used to transfer a .hex file from a PC to the microcontroller memory by means of the appropriate hardware. Every flash program includes numerous options used for setting the microcontroller's configuration bits.

Programmer

MikroElektronika
SOFTWARE AND HARDWARE SOLUTIONS FOR EMBEDDED WORLD ...making it simple

TO OUR VALUED CUSTOMERS

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The primary aim of our company is to design and produce high quality electronic products and to constantly improve the performance thereof in order to better suit your needs.

Nebojsa Matic
General Manager

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1.0. Introduction to dsPICprog Programmer

The *dsPICprog*™ programmer is a great tool used for programming dsPIC® microcontrollers from Microchip®. As a low-consumption device, it is ideal to be used with notebooks. It's unique design and simplicity make it a very popular tool among beginners and professional users alike. The *dsPICprog* programmer communicates to the microcontroller through a USB cable which is also used for powering the programmer. In order to use this programmer, it is necessary to have the *dsPicFLASH* program and the appropriate driver, provided on the product CD, installed on your PC. After that, you can use the *dsPICprog* programmer and a hex code generated in any dsPIC compiler to load the program into a dsPIC microcontroller.

The *dsPICprog* programmer is built into all Mikroelektronika's dsPIC development systems. The same programmer is also available as a stand-alone device used for programming dsPIC microcontrollers built into (soldered on) the target device.

The *dsPICprog* programmer is built into all Mikroelektronika's development systems designed for working with dsPIC microcontrollers.

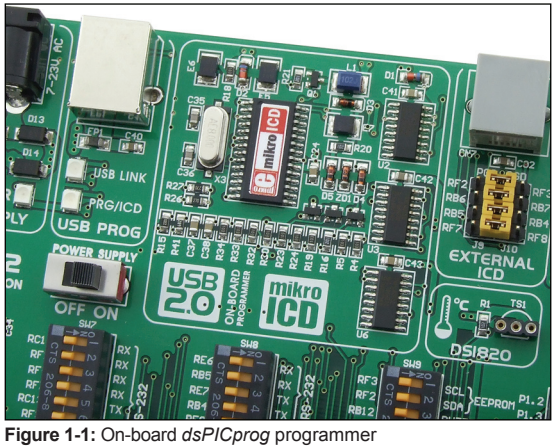


Figure 1-1: On-board *dsPICprog* programmer

The *dsPICprog* programmer is also available as a stand-alone device used for programming dsPIC microcontrollers built into (soldered on) the target device.

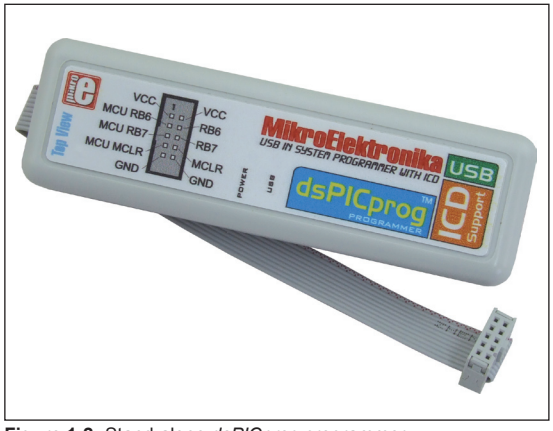
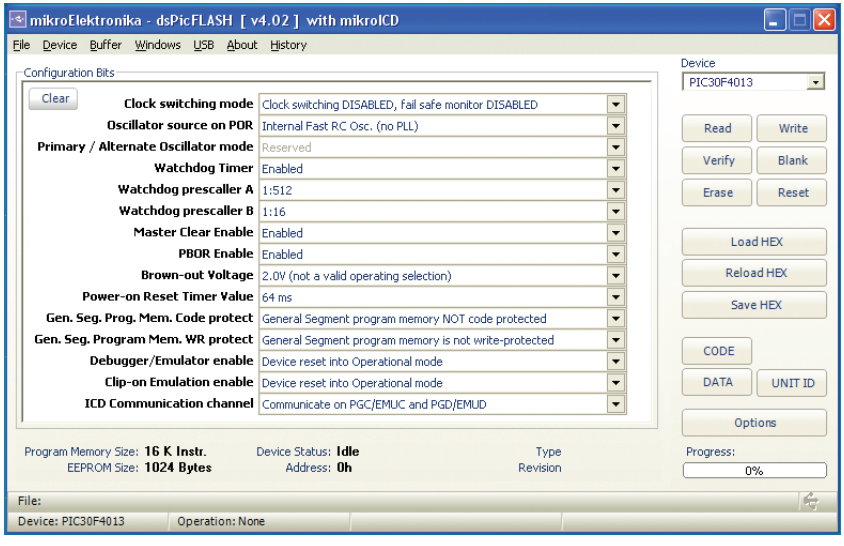


Figure 1-2: Stand-alone *dsPICprog* programmer

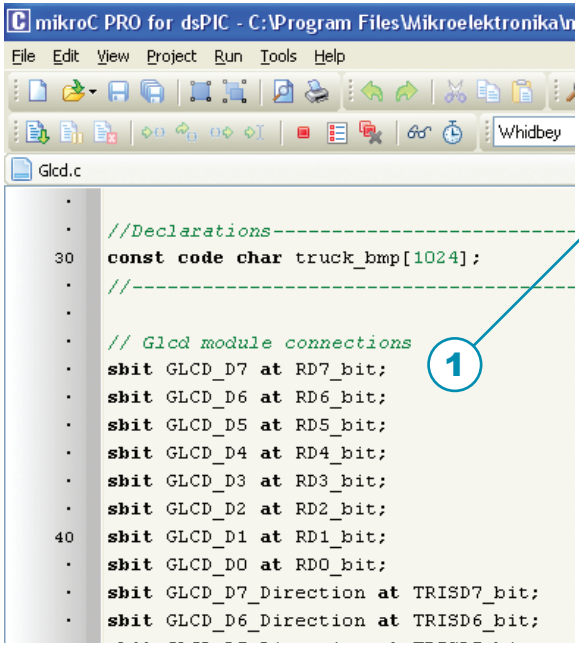


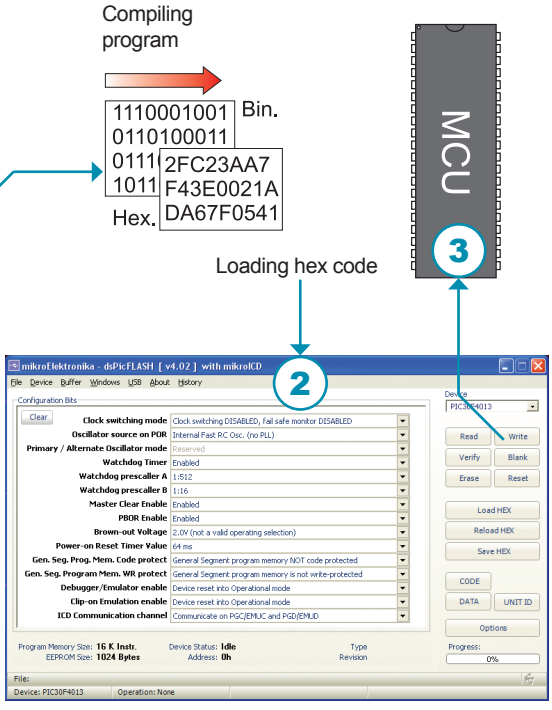
The *dsPicFLASH* program contains an option for selecting the microcontroller to be programmed. The latest version of this software with updated list of supported microcontrollers can be downloaded free of charge from our website at www.mikroe.com

Figure 1-3: *dsPicFLASH* program's window

2.0. Programming Microcontrollers

The process of programming microcontrollers starts by writing a program in one of dsPIC compilers (*mikroC PRO for dsPIC*, *mikroBASIC PRO for dsPIC, mikroPASCAL PRO for dsPIC* etc.). When the program is correctly written, it should be compiled into a format that can be loaded into the microcontroller. The program to be loaded into the microcontroller has the *.hex* extension. As soon as the .hex file is generated, the program can be loaded into the microcontroller.





① Write a code in one of dsPIC compilers and generate a .hex file;

② In the *dsPicFLASH* program's main window select the microcontroller and load the hex code into the programmer's buffer;

③ Click the *Write* button to program the microcontroller.

On the right side of the *dsPicFLASH* program's window there are several options which make the programming process easier, whereas, on the left side of the window there are a number of options for microcontroller settings. Positioned in the bottom right corner of the window, the *Progress* bar enables you to monitor the programming process.

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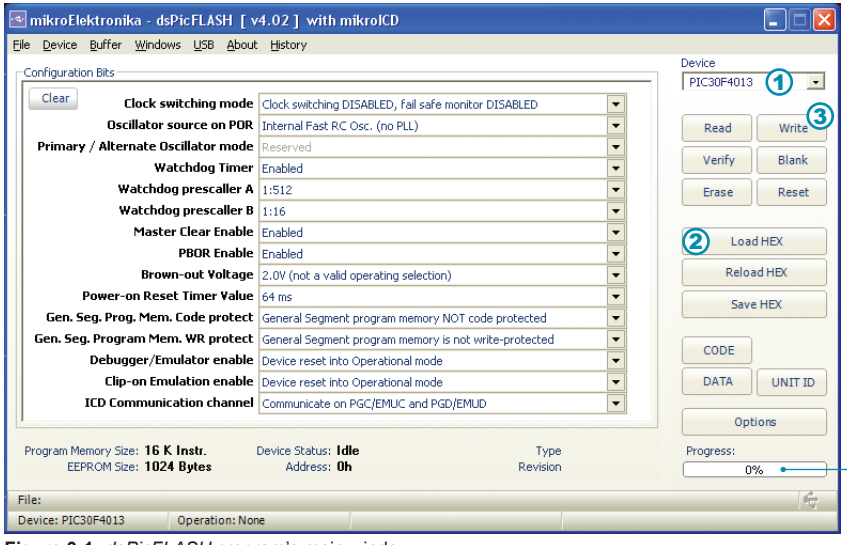
3.0. *dsPicFLASH* Program

The *dsPicFLASH* program is easy to use as all the options necessary for its operation are provided in a simple window which will appear either by clicking on the *dsPICFLASH* icon or automatically by starting the programming process (*Build And Program* option) in one of dsPIC compilers.
The options used for setting configuration bits are provided on the left side of the window, whereas the options for loading .hex file into the programmer and microcontroller are provided on the right side of the window.
The left side of the window can be different depending on the type of the microcontroller in use and its configuration bits.



To load the program into the microcontroller, do the following:

1. Select the microcontroller to be programmed and the *dsPicFLASH* will automatically set default parameters for working with the respective microcontroller.
2. Click the *Load HEX* option to open the window to select the hex code to be loaded into the microcontroller.
3. Click the *Write* option to start the programming process.

The *Progress* bar shows the programming progress expressed in a percentage.

Figure 3-1: *dsPicFLASH* program's main window

The *dsPicFLASH* program enables a hex code, generated in one of dsPIC compilers, to be loaded into the microcontroller. The hex code should be loaded first into the programmer's buffer by clicking the *Load HEX* option, then into the microcontroller by clicking the *Write* option within the programmer's main window. The programming progress will be shown in the *Progress* bar positioned in the bottom right corner of the same window.

4.0. Software Installation

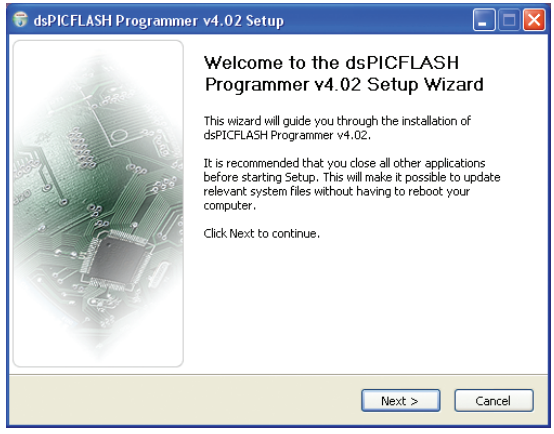
Before you start up the *dsPicFLASH* program, it is necessary to install the appropriate driver. For more information refer to quick guide for installing USB drivers.

Step 1: Start installation

Insert the product CD into a CD drive. After a few seconds, a list with all Mikroelektronika's products will appear on the screen. To start the process of installing the *dsPicFLASH* software, click on the setup icon provided in the *dsPICprog* section on the product CD:

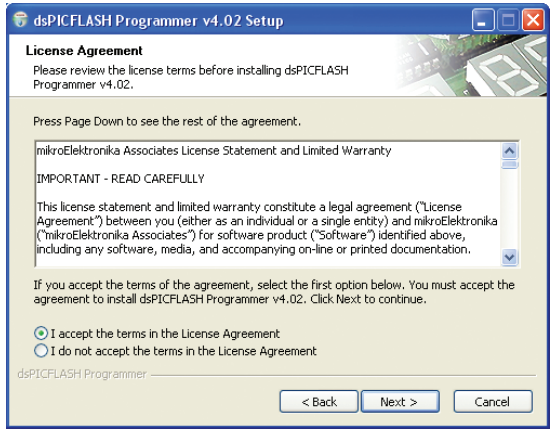
CD Drive:/zip/dspicprog2_programmer_v402.zip

You can also download the *dsPicFLASH* free of charge from our website. In this case the installation starts from your hard drive. A welcome window appears. Click *Next* to proceed.


dsPICFLASH Programmer v4.02 Setup
Welcome to the dsPICFLASH Programmer v4.02 Setup Wizard
This wizard will guide you through the installation of dsPICFLASH Programmer v4.02.
It is recommended that you close all other applications before starting Setup. This will make it possible to update relevant system files without having to reboot your computer.
Click Next to continue.
Next >
Cancel

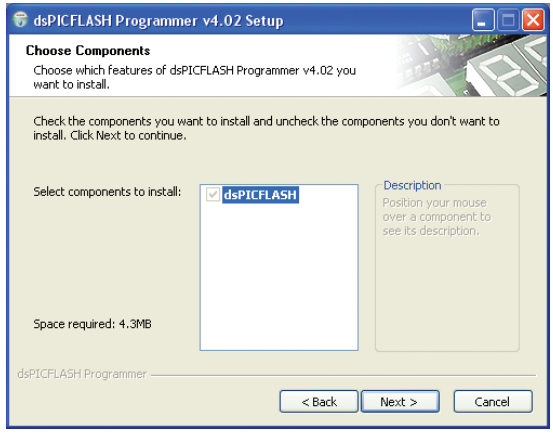
Step 2: License Agreement

Before you start the installation process, please review the license agreement terms. To accept them, select the option *I accept the terms in the License Agreement* and click *Next*.


dsPICFLASH Programmer v4.02 Setup
License Agreement
Please review the license terms before installing dsPICFLASH Programmer v4.02.
Press Page Down to see the rest of the agreement.
mikroElektronika Associates License Statement and Limited Warranty
IMPORTANT - READ CAREFULLY
This license statement and limited warranty constitute a legal agreement ("License Agreement") between you (either as an individual or a single entity) and mikroElektronika ("mikroElektronika Associates") for software product ("Software") identified above, including any software, media, and accompanying on-line or printed documentation.
If you accept the terms of the agreement, select the first option below. You must accept the agreement to install dsPICFLASH Programmer v4.02. Click Next to continue.
I accept the terms in the License Agreement
I do not accept the terms in the License Agreement
dsPICFLASH Programmer
< Back
Next >
Cancel

Step 3: Choose Components

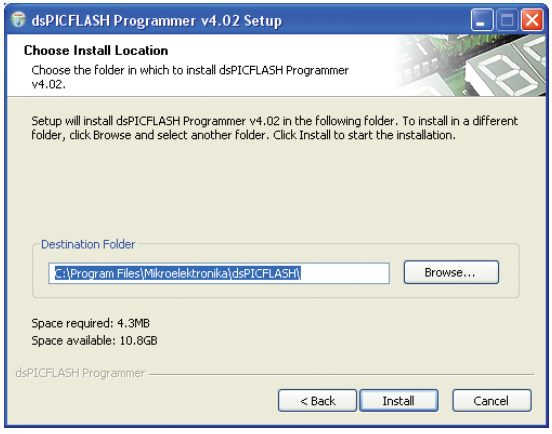
To make your choice simple, this installation step offers you only one component to choose. Click *Next*.


dsPICFLASH Programmer v4.02 Setup
Choose Components
Choose which features of dsPICFLASH Programmer v4.02 you want to install.
Check the components you want to install and uncheck the components you don't want to install. Click Next to continue.
Select components to install:
dsPICFLASH
Description
Position your mouse over a component to see its description.
Space required: 4.3MB
dsPICFLASH Programmer
< Back
Next >
Cancel

Step 4: Choose Installation Location

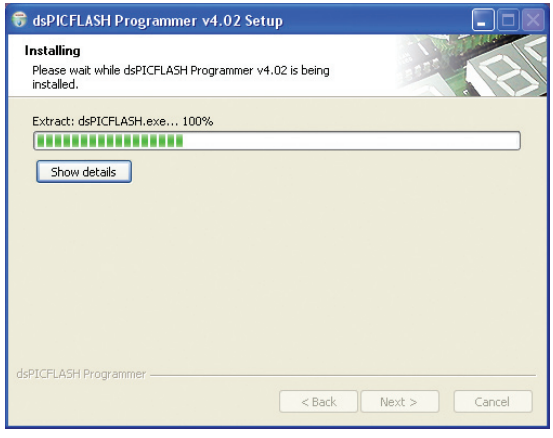
Now, you should specify the folder to install the *dsPicFLASH* program into. If you want to install it in a folder different from default, click *Browse* and select another folder on your hard disc. Then click *Next*. If you choose the default folder, the program will be installed on the following location:

C:\Program Files\Mikroelektronika\dsPICFLASH


dsPICFLASH Programmer v4.02 Setup
Choose Install Location
Choose the folder in which to install dsPICFLASH Programmer v4.02.
Setup will install dsPICFLASH Programmer v4.02 in the following folder. To install in a different folder, click Browse and select another folder. Click Install to start the installation.
Destination Folder
C:\Program Files\Mikroelektronika\dsPICFLASH\
Browse...
Space required: 4.3MB
Space available: 10.8GB
dsPICFLASH Programmer
< Back
Install
Cancel

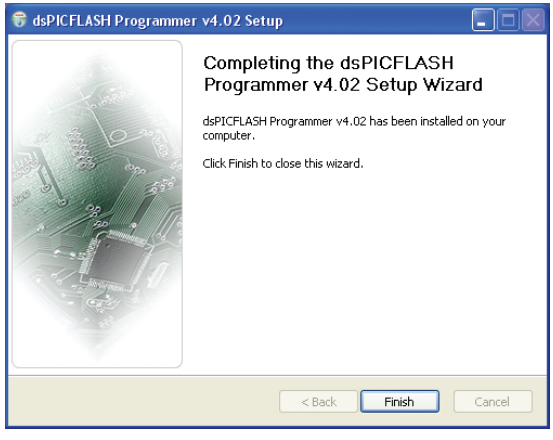
Step 5: Installation Details

The installation of the *dsPicFLASH* program starts immediately. The installation progress will be shown on the screen. If you are interested in details about the installation, click the *Show details* button.



Step 6: Completing Installation

Windows will inform you in the window, as shown in figure on the right, that the *dsPicFLASH* program has been successfully installed. Click *Finish* to complete the installation.

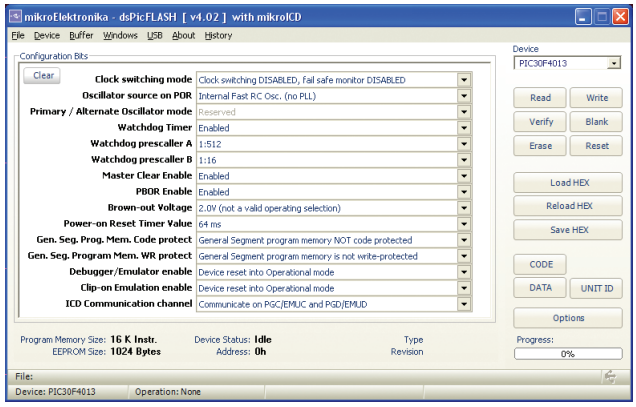

dsPICFLASH Programmer v4.02 Setup
Completing the dsPICFLASH Programmer v4.02 Setup Wizard
dsPICFLASH Programmer v4.02 has been installed on your computer.
Click Finish to close this wizard.
< Back
Finish
Cancel

5.0. Practical Example of Using *dsPicFLASH* Program

After the software installation is complete, connect the programmer to your development system using a USB cable. The USB connection will be automatically established, which is indicated by the *USB LINK LED's* illumination.

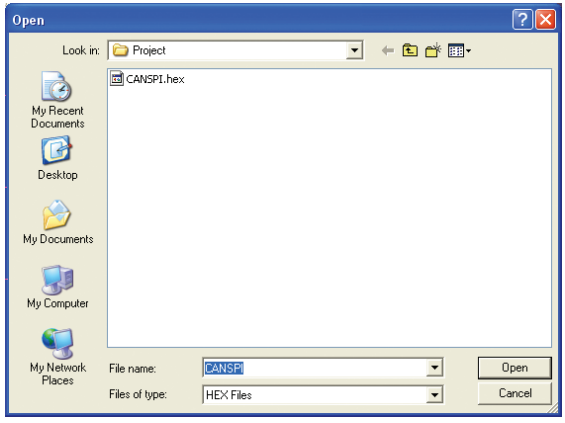
Step 1: Start up the *dsPicFLASH* program

Start up the *dsPicFLASH* program installed on your PC. Click the *Device* option in order to select the microcontroller to be programmed. The *dsPicFLASH* program will automatically set default parameters for working with the respective microcontroller.



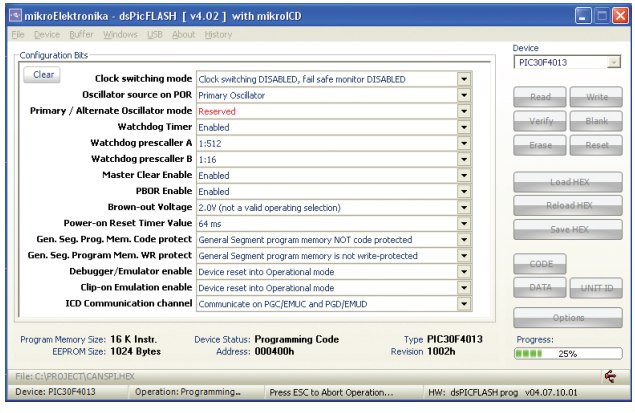
Step 2: Load a hex code into programmer's buffer

Click the *Load HEX* option to open the *Open* window, as shown in figure on the right. Select the relevant file with the *.hex* extension and click the *Open* button. The file will be automatically loaded into the programmer's buffer.



Step 3: Write the hex code into the microcontroller

Click the *Write* option in the upper right corner of the main window to start programming the microcontroller. The programming progress will be shown in the bottom right corner of the same window.



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6.0. Keyboard Shortcuts and Command Line Parameters

Keyboard Shortcuts:

Alt-E	Erase the content of microcontroller's memory
Alt-B	Program memory blank check (whether it is empty)
Alt-W	Write a hex code into a dsPIC microcontroller
Alt-V	Verify the loaded hex code
Alt-R	Program memory reading
Alt-D	Change microcontroller type
Ctrl-S	Save hex code
Ctrl-O	Open (Load) file with hex code
Ctrl-R	Reload hex code

Command Line:

The *dsPicFLASH* program may also be activated from the command line, thus enabling you to use it from some other software, compiler etc. Here is a list of the command line parameters:

-w	Write to dsPIC microcontroller
-v	Verify
-e	Erase program from dsPIC microcontroller
-r	Read program from dsPIC microcontroller
-p	Type of microcontroller (for example, dsPIC30F4013, dsPIC30F5011 etc.)
-f	.hex file name (FLASH) "[<name must be enclosed in quotation marks>]"
-b	Memory blank check (whether it is empty)
-q	Close the *dsPicFLASH* program after programming

Example 1:

***dsPicFLASH*.exe -w -pdsPIC30F4013 -v -f"C:\somefile.hex"**

This command is used for loading *C:\somefile.hex* into the dsPIC30F4013 microcontroller. This file will be verified immediately after being loaded into the microcontroller.

Example 2:

***dsPicFLASH*.exe -r -pdsPIC30F4013**

This command is used for reading the content of the dsPIC30F4013 microcontroller's program memory.

Example 3:

***dsPicFLASH*.exe -e -pdsPIC30F4013**

This command is used to erase program from the dsPIC30F4013 microcontroller.

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